

1. Which property of real numbers is utilized by rewriting  $11x + 5xy$  as  $x(11 + 5y)$ ?
- Associative property for addition
  - Commutative property for addition
  - Closure property for multiplication
  - Distributive property for multiplication over addition

2. The volume of a cylinder is given by

$$V = \pi r^2 h$$

where  $r$  is the radius of the cylinder and  $h$  is the cylinder's height.

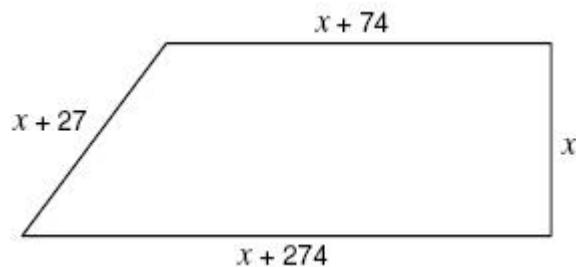
Which equation could be used to solve for  $h$ ?

- a.  $h = \pi r^2 V$       b.  $h = \frac{V}{\pi r^2}$       c.  $h = V + \pi r^2$       d.  $h = V - \pi r^2$

3. What is the solution to  $2 - 4a = 16$ ?

- a. 18      b. 10      c.  $-\frac{7}{2}$       d.  $-\frac{9}{2}$

4. Tambria's property has the shape of a trapezoid with the dimensions shown. If the perimeter of the property is 3,279 feet, what is the value of  $x$ ?



- a. 726 ft.      b. 781.25 ft.      c. 913.5 ft.      d. 1,452 ft

5. What is the solution to the inequality  $7x - 5 \geq x + 1$ ?

- a.  $x \leq 1$       b.  $x \geq 1$       c.  $x \geq -1$       d.  $x \leq \frac{5}{2}$

6. What is the value of  $3x^2 - y^2$  if  $x = -1$  and  $y = 3$ ?

- a. 12      b. -3      c. -6      d. -12

7. Which expression correctly represents \$10 less than twice the cost,  $c$ ?

- a.  $10 - 2c$       b.  $10 - 2 + c$       c.  $2c - 10$       d.  $\frac{c}{2} - 10$

8. Sara was looking at a picture of herself and 3 friends. She measured the height of her image as 10 centimeters. If Sara is actually 60 inches tall, which equation can she use to find  $h$ , the actual height in inches, of one of her friends who is  $c$  centimeters tall in the picture?
- a.  $h = 10c$       b.  $h = 6c$       c.  $h = \frac{5}{3}c$       d.  $h = \frac{1}{6}c$
9. What property of real numbers justifies the following statement?
- $8x(y + 3) - 4y$  is equivalent to  $8x(y) + 8x(3) - 4y$
- a. The commutative property of multiplication  
b. The distributive property of multiplication over addition  
c. The associative property of multiplication  
d. The closure property of multiplication
10. Given the formula for the area of a rectangle as  $A = LW$ , solve for  $W$ ?
- A.  $W = \frac{A}{L}$       B.  $W = \frac{L}{A}$       C.  $A = \frac{L}{W}$       D.  $W = AL$
27. What is the value of  $\frac{a+b}{2a}$  if  $a = 12$  and  $b = 15$ ?
- a.  $\frac{8}{9}$       b.  $\frac{9}{8}$       c. 2      d. 28
11. Which is an example of the commutative property?
- a.  $7w + 4 = (5 + 2)w + 4$   
b.  $7w + 28 = 7(w + 4)$   
c.  $7w + 4 = 7w + 4$   
d.  $7w + 4 = 4 + 7w$
12. What is the value of  $3c^2d + cd - 8$  if  $c = -7$  and  $d = 4$ ?
- a. -288      b. -120      c. 552      d. 608
13. Which is an example of the distributive property?
- a.  $3 + (2q - 9)p = 3 + 2pq - 9p$   
b.  $3 + (2q - 9) = (2q - 9) + 3$   
c.  $3 + (2q - 9) = 2q + (-9 + 3)$   
d.  $3 + (2q - 9) = 3 + (2q - 9)$
14. Which statement is *always* true?
- a.  $8 - x = x - 8$       b.  $8 \div x = x \div 8$       c.  $x + (8 \cdot \frac{1}{8}) = x + 1$       d.  $x + 8 = x \cdot 8$

**15.** Which expression correctly describes the sum of  $x$  and 3 divided by  $y$ ?

- a.  $x + 3 \div y$       b.  $\frac{x+3}{y}$       c.  $x + \frac{3}{y}$       d.  $\frac{x+y}{3}$

**16.** Which correctly describes  $a$  divided by the difference of  $b$  and 8?

- a.  $\frac{a}{8-b}$       b.  $\frac{a}{b} - 8$       c.  $a \div b - 8$       d.  $\frac{a}{b-8}$

**17.** A triangle has a perimeter of 24 ft. The first side measures  $4x$ . The second side measures  $x + 4$  and the third side measures  $10(x - 1)$ . Find the value of  $x$ .

- a.  $x = -2$       b.  $x = \frac{4}{3}$       c.  $x = 1.5$       d.  $x = 2$

**18.** Find three consecutive integers that have a sum of 24.

- a. 6, 7, 8      b. 7, 8, 9      c. 6, 8, 10      d. 2, 8, 14

**19.** Dan purchases DVDs from a website. Each DVD costs \$11 and the shipping fee is \$6.95. Dan is charged a total of \$50.95. How many DVDs did he purchase?

- a. 4 DVDs      b. 8 DVDs      c. 16 DVDs      d. 24 DVDs

**20.** A preschool has 49 students. There are 5 more boys in the school than there are girls. How many girls are in the class?

- a. 17      b. 22      c. 27      d. 44

**21.** A school has 327 students in the 10<sup>th</sup> grade. There are 17 more girls in the class than there are boys. How many boys are there in the class?

- a. 99      b. 155      c. 172      d. 198

**22.** Which of the following equations has a solution of  $x = 3$ ?

- a.  $x + 2x - 3 = 6$       b.  $2(x + 1) = 8$       c.  $5x + 4 = 19$       d.  $\frac{x}{3} + 4 = 6$

**23.** Which of the following equations has no solution?

- a.  $12x + 6 = 6(2x + 1)$       b.  $2(x + 3) = 2x + 6$       c.  $8x = 4(2x + 1)$       d.  $16x = 22 + 5x$

**24.** What is the solution of the equation  $4y + y + 1 = 7(y - 1)$ ?

- a. -4      b. -3      c. 3      d. 4

25. What is the value of  $x$  in the proportion  $\frac{15}{-2x} = \frac{5}{12}$ ?

- A. -26      B. -18      C. 18      D. 36

26. Solve for  $r$ :  $I = Prt$

- A.  $I - Pr = r$       B.  $\frac{I}{Prt} = r$       C.  $\frac{I}{Pr} = t$       D.  $IPr = r$

27. What is the 1<sup>st</sup> step in solving the equation?  $5 + \frac{x}{12} = -1$

- a. Add 1 to each side      b. Multiply each side by 12      c. Subtract 5 from each side      d. Add 5 to each side

28. Examine the problem below. Which line contains an error? Solve correctly!

Line 1:  $6x - 2(x - 5) = 22$

Line 2:  $6x - 2x - 10 = 22$

Line 3:  $4x - 10 = 22$

Line 4:  $4x = 32$

Line 5:  $x = 8$

- A. Line 2      B. Line 3      C. Line 4      D. Line 5

29. Jerri wrote these steps when solving an equation.

$$17(x + 3) = 6 - 4$$

Step 1:  $17x + 51 = 6 - 4$

Step 2:  $17x + 51 = 2$

Step 3:  $17x = -49$

Step 4:  $x = \frac{-49}{17}$

Which property justifies Step 1?

- a. Associative property for addition      b. Commutative property for addition  
c. Distributive property      d. Additive identity property

30. Which expression is not equivalent to the following expression?

$$3 \times 3 \times 3 \times 3 \times 3$$

- a.  $3^3 \cdot 3^2$       b.  $3^1 \cdot 3^5$       c.  $9^3$       d.  $27^2$

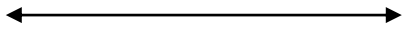
## SHOW YOUR WORK

Solve each inequality, graph the solution on the number line, and state the interval of the solution.

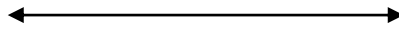
31.  $5(x+3) < 6x+2$

32.  $7x+9 \geq 8(x+3)$

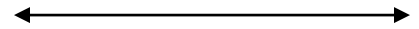
33.  $2(x+5) > 2x-3$



Interval = \_\_\_\_\_



Interval = \_\_\_\_\_



Interval = \_\_\_\_\_

Simplify each expression.

34.  $3[20 - (7 - 5)^2]$

35.  $[3^3 \div 9 + 4 \bullet 3] - 8(-4 + 6)$

36.  $\frac{(9-5)^2 + 2}{(8-7)^3 \bullet 3^2}$

37.  $(34)^0$

38.  $\frac{3^2}{(-3)}$

39.  $(-2)^2 - 2^2$

40.  $4^2 - (-4)^2$

Evaluate given  $a = 3$ ,  $b = -1$ , and  $c = -2$ .

41.  $abc$

42.  $2a + 3c$

43.  $3c - 2b + a$

44.  $a^2 + b^2 + c^2$

Name the property illustrated by each statement:

45.  $0 + b = b$  \_\_\_\_\_

46. If  $x + y = 3$  then  $3 = x + y$  \_\_\_\_\_

47.  $x = x$  \_\_\_\_\_

48.  $4 \cdot 1 = 4$  \_\_\_\_\_

49.  $1 \cdot y = y$  \_\_\_\_\_

50.  $7 = 7$  \_\_\_\_\_

51.  $0 = 0 \cdot 12$  \_\_\_\_\_

52. If  $3 + 4 = 7$  and  $7 = x$ , then  $3 + 4 = x$  \_\_\_\_\_

53.  $m \cdot \frac{1}{m} = 1$  \_\_\_\_\_

54.  $5 + (-5) = 0$  \_\_\_\_\_

55. If  $12 = 17 - 5$  then  $17 - 5 = 12$  \_\_\_\_\_

56.  $x + 2 = x + 2$  \_\_\_\_\_

57.  $x + y = y + x$  \_\_\_\_\_

58.  $5(m \cdot n) = (5 \cdot m) \cdot n$  \_\_\_\_\_

59.  $6(x + 2y) = 6x + 12y$  \_\_\_\_\_

60.  $xy = yx$  \_\_\_\_\_

61.  $(2a + 3b) + 4c = 2a + (3b + 4c)$  \_\_\_\_\_

62.  $4x - 12y = 2(2x - 6y)$  \_\_\_\_\_